
Chapter 3: Troubleshooting procedures

Initial system start-up quick reference checklist

Problems that occur at initial system startup are usually caused by incorrect installation or configuration. Hardware failure is a less frequent cause.

Table 3-1
System start-up reference chart

Check	Reference
Is voltage switch setting correct for line voltage?	Refer to the <i>Meridian IVR Installation Guide</i> .
Is AC power available at the wall outlet?	Obvious
Is system power cord properly connected to system and plugged into NEMA 5-15 outlet for 100-120 V AC or NEMA 6-15R outlet for 200-240 V AC?	Refer to the <i>Meridian IVR Installation Guide</i> .
Is the I/O panel seated on base board?	See "System base board and I/O panel" on page 4-26 of this guide.
If you pressed power on/off push button switch to turn server on, power-on LED should be lit.	Verify that the power-on LED on the Front Panel Controls and Indicators is lit.
Are cables correctly connected and secured?	See "System base board and I/O panel" on page 4-26 of this guide.
Are jumper settings on base board correct?	See "System board jumpers" on page 4-59 of this guide.

Table 3-1
System start-up reference chart (Continued)

Check	Reference
Are expansion boards, modules, and components properly seated on the base board?	See "Add-in boards" on page 4-21 of this guide.
Are jumper and switch settings on expansion boards and peripheral devices correct?	See "Add-in boards" on page 4-21 of this guide.
Are peripheral devices properly installed?	See "Add-in boards" on page 4-21 of this guide.
If system has a hard drive, is it properly formatted, defined, and recognized?	Refer to the <i>Meridian IVR Installation Guide</i> .
Is the SCSI backplane configured and terminated correctly?	See "Swapping SCSI hard drives" on page 4-46 of this guide.
Are device drivers properly installed?	See "Swapping SCSI hard drives" on page 4-46 of this guide.
Are configuration settings made with the SCU correct?	Refer to Appendix C: "System configuration utility".
Is the operating system properly loaded?	Refer to the <i>Meridian IVR Installation Guide</i> .
End	

Specific operational problems and corrective actions

The following sections provide possible solutions to the following problems:

- Power light does not light.
- System fans do not rotate.
- Characters do not appear on screen.
- Characters on the screen appear distorted.
- No beep or incorrect beep pattern.
- Diskette drive activity light does not work.
- Hard disk drive activity light does not work.
- Tape drive activity light does not work.
- CU does not boot.

If you cannot correct the problem with any of the solutions, contact your Nortel service representative.

Power light does not work

The following table outlines actions you can take if your power light is not working.

Table 3-2
Power light troubleshooting

Check	Reference
Is the system otherwise operating normally?	The LED is defective.
Are there other system problems?	Check the items listed in the Fans section below.

If the problems persist, contact your Nortel service representative.

System cooling fans do not rotate

This section outlines high-level actions that you can take if your system cooling fans are not operating.

Check the following:

- Is AC power available at the wall outlet?
- Is the system power cord properly connected to the system and the wall outlet?
- If present, is the fuse in the system AC power cord plug OK?
- Is the power-on light lit?
- Is the power connector for the front cooling fan properly connected to the system board?
- Is the cable from the front panel board connected to the system board?
- Are the power supply cables properly connected to the system board?
- Is the power supply cable with the 2-pin enable connector properly connected to the system board?
- Are there any shorted wires caused by pinched cables or power connector plugs forced the wrong way into power connector sockets?

If the switches and connections are correct and AC power is available at the wall outlet, the power supply has probably failed. Contact your Nortel service representative for assistance.

If the fan motor has failed, you need to replace the fan. See “Fans” on page 4-32.

No characters appear on screen

This section outlines steps which you can take if characters do not appear on your video display terminal.

Check the following:

- Is the keyboard working?
- Is the video monitor plugged in and turned on?
- Are the brightness and contrast controls on the video monitor properly adjusted?
- Are the video monitor switch settings correct?
- Is the video monitor signal cable properly installed?
- Is the onboard video controller enabled?

Use the following procedure if you are using an add-in video controller board.

Procedure 3-1

Add-in video board troubleshooting

- 1** Verify that the video controller board is fully seated in the system board connector.
- 2** Run the System Configuration Utility to disable the onboard video controller. Specify that an offboard VGA/EGA adapter is installed.
See Appendix C: "System configuration utility" for more details.
- 3** Reboot the system for changes to take effect.

If there are still no characters on the screen after you reboot the system, contact your Nortel service representative for assistance.

POST emits a specific beep pattern to indicate problems with the video display controller. If you do not receive a beep pattern and characters do not appear, the video display monitor or video controller may have failed. Contact your Nortel service representative<Enter> for assistance.

Characters are distorted or incorrect

This section outlines high-level steps which you can take if characters on your video display terminal are distorted or incorrect.

Check the following:

- Are the brightness and contrast controls properly adjusted on the video monitor?
- Are the video monitor signal and power cables properly installed?

If the problem persists, the video monitor may be faulty, or it may be the incorrect type. Contact your Nortel service representative for assistance.

Incorrect or no beep codes

This section outlines high-level steps which you can take if your system is producing incorrect beep codes or if no beep codes are played.

Check the following:

- Is the speaker enabled?
- Is the signal cable connected to the front panel?

Record the beep codes emitted by POST. Refer to "POST error and signal codes" on page A-4 for information about beep codes and error messages.

If the system operates normally and there is no beep, the speaker may be defective. Verify that the speaker is enabled by running the System Configuration Utility. For information about running the SCU, see Appendix C: "System configuration utility".

If the speaker is enabled but not functioning, contact your Nortel service representative.

Diskette drive activity light does not light

This section outlines steps which you can take to verify the correct operation of your diskette drive activity light.

Check the following:

- Are the diskette drive power and signal cables properly installed?
- Are all relevant switches and jumpers on the diskette drive set correctly?
- Is the diskette drive configured properly?

If you are using the onboard diskette controller, use the System Configuration Utility to make sure that the Onboard Floppy parameter is set to Enabled. If you are using an add-in diskette controller, make sure that the Onboard Floppy parameter is set to Disabled. For information about running the SCU, see Appendix C: "System configuration utility".

If the problem persists, there may be a problem with the diskette drive, system board, or drive signal cable. Contact your Nortel service representative for assistance.

Hard disk drive activity light does not light

If you have installed one or more hard disk drives in your system, check the following:

- Are the power and signal cables to the hard disk drive properly installed?

Note: The hard disk drive activity light, second light from the top, lights when either an IDE hard disk drive or SCSI device is in use.

- Is the hard disk drive properly configured?
- If your system contains a SCSI host adapter controller board, is the hard disk activity LED cable connector plugged into the controller board?

Run the System Configuration Utility to make sure that the hard disk drive is configured with the correct parameters. For information about running the SCU, see Appendix C: "System configuration utility".

If the problem persists, there may be a problem with the hard disk drive, the add-in controller board, system board, drive signal cable, or LED connector. Contact your Nortel service representative for assistance.

Testing hardware components

The following sections outline how to test specific hardware components of the Meridian IVR 2.0/I system.

Intel ALTAIR motherboard

This section outlines procedures for visual inspection and testing of the components of the ALTAIR motherboard.

Visual inspection of connections

The following connections on the motherboard can be verified visually:

- CPU module connector
- memory module connector
- onboard DRAM slots
- master add-in board slots (3 PCI, 5 EISA, and 1 hybrid)
- PS/2-compatible parallel port
- two PS/1-compatible, 9-pin serial ports
- VESA video connector

The following procedure outlines how you can verify motherboard connections:

Procedure 3-2 Verifying connections

- 1 Power down the Application Processor as described in "Powering down the application processor" on page 4-5.
- 2 Remove the side cover of the Application Processor as described in "Removing the side cover" on page 4-7.
- 3 Verify all connections visually.
- 4 Reseat all loose connections by gently pushing connectors into place.

The following figure illustrates the major connections on the motherboard.

Figure 3-1
Motherboard connections

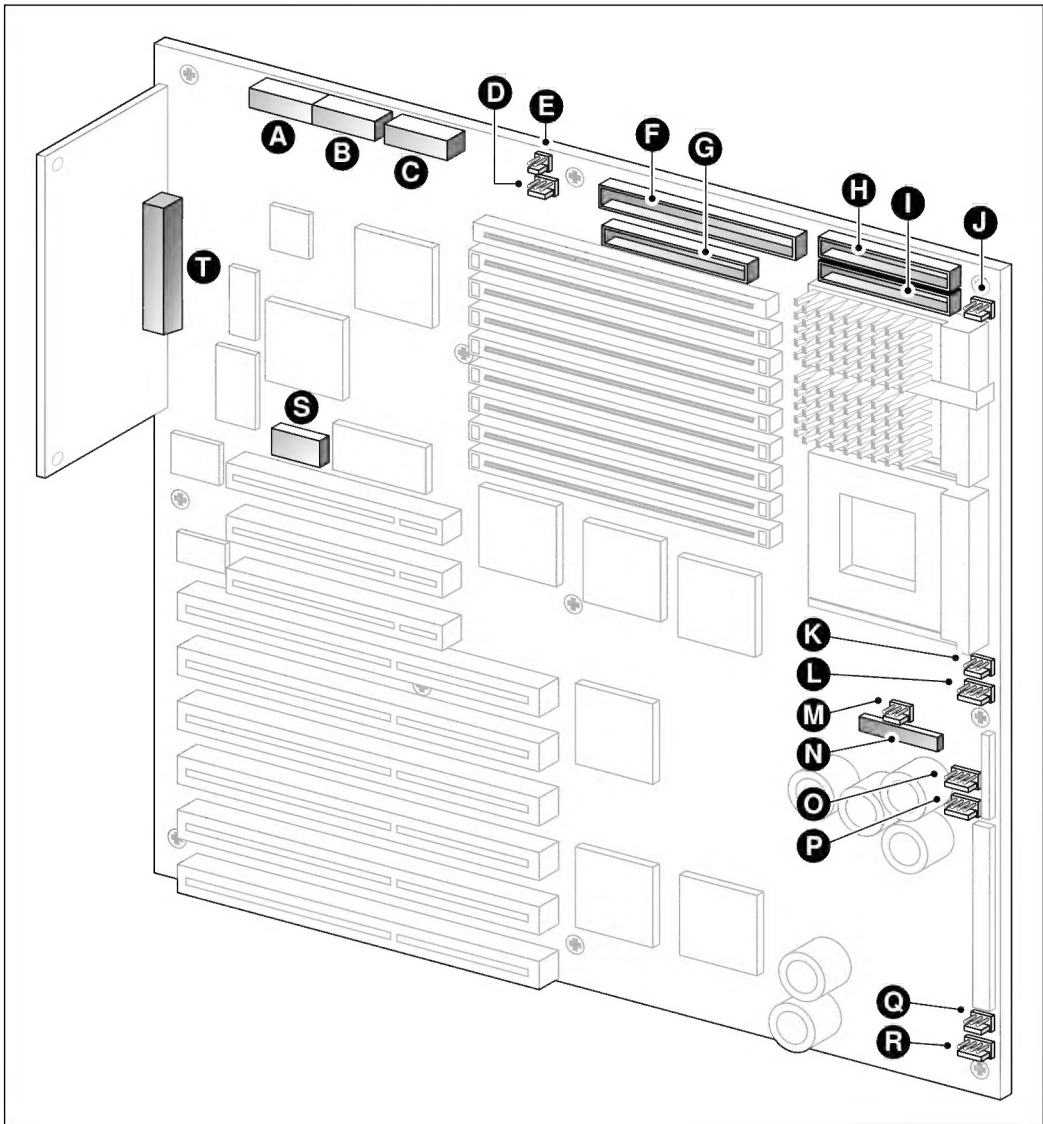


Table 3-3
Motherboard connections

Letter	Description
A	Power connector
B	Power connector
C	Power connector
D	Configuration jumpers
E	Configuration jumpers
F	SCSI connector
G	IDE connector
H	Front panel connector
I	3 1/2-inch drive connector
J	5 volt microprocessor fan connector
K	12 volt fan connector
L	Hard drive LED connector
M	5 volt fan connector
N	Server monitor module extended feature connector
O	Chassis switch
P	Front panel hard drive LED connector
Q	12 volt fan connector and jumper
R	Hard drive LED connector
S	3.3 volt PCI connector
T	I/O panel connector

Motherboard component diagnostics

The following procedure outlines how to test motherboard components using MTA Testview. The following components can be tested using this routine:

- real-time clock/calendar (RTC) chip
- basic input/output system (BIOS) in flash EPROM
- programmable interrupt controller (PIC)
- programmable interrupt timer (PIT)
- system monitor (INCA)
- direct access memory (DMA)
- serial controller (COM_1 and COM_2)
- parallel port (PARALLEL_1)
- speaker (SPEAKER)

Use the following procedure to test these components.

Procedure 3-3**Performing motherboard diagnostic routine**

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2 Change to the testview directory:

```
c:  
cd c:\testview
```
- 3 Enter the following command:

```
testview /self
```

A menu appears displaying your system hardware.
- 4 Press the <Enter> key to continue.

- 5 Enable the following test module options using the arrow keys and spacebar:
- POST
 - INCA
 - SMP_PROCESSOR_0
 - RTC
 - PIC
 - PIT
 - DMA
 - LED
 - SPEAKER
 - COM1
 - COM2
 - PARALLEL_1

The selected tests are displayed in deep blue.

- 6 Change to the OPTIONS/RUN ALL TESTS menu.
- 7 Change the LOOP COUNT parameter from Unlimited to 1 pass.
- 8 Press the <Enter> key to begin the test.

This set of test modules takes up to three minutes per run.

Intel Pentium P5-75 MHz or 100 MHz CPU

The following procedure tests these functions of the CPU:

- CPU information
- floating point unit
- clock speed
- arithmetic functions
- logical functions

This test can only detect CPUs of types Pentium or lower.

Procedure 3-4
CPU diagnostics

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2 Change to the testview directory:

```
c:
cd c:\testview
```
- 3 Start testview using the following command:

```
testview /self
```

A display of your system hardware appears.
- 4 Press the <Enter> key to continue.
- 5 Enable the following test modules using the arrow keys and the spacebar:
 - CPU
 - MATH
- 6 Change to the OPTIONS...RUN ALL TESTS menu.
- 7 Change the LOOP COUNT parameter from Unlimited to 1 pass.
- 8 Press the <Enter> key to start the test.

This set of test modules takes about 5 seconds per run.

Onboard dynamic random access memory

The following procedure tests these functions of dynamic random access memory (DRAM):

- Refresh request
- Data lines
- Addressing
- Read/write operation
- Each location in memory and the bus
- Cache memory

This diagnostic routine will not run correctly if an extended memory manager is present.

Procedure 3-5 DRAM diagnostics

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2 Change to the testview directory:

```
c:  
cd c:\testview
```
- 3 Start testview using the following command:

```
testview /self
```

A display of your system hardware appears.
- 4 Press the <Enter> key to continue.
- 5 Enable the following test modules and their submenu tests using the arrow keys and spacebar:
 - Cache
 - Memory
- 6 Change to the OPTIONS...RUN ALL TESTS menu.
- 7 Change the LOOP COUNT parameter from Unlimited to 1 pass.
- 8 Press the <Enter> key to start the test.

The memory test takes approximately nine minutes for every four Mbyte of RAM in your system.

Mouse and onboard mouse controller

The following procedure outlines how to interactively test your mouse and mouse controller.

This test checks the proper movement of the mouse pointer and proper mouse button operation. You are directed to move the mouse to specific screen areas.

Procedure 3-6 **Mouse diagnostics**

- 1** Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2** Load the appropriate mouse driver.
- 3** Change to the testview directory:

c:
cd c:\testview
- 4** Start testview using the following command:

testview /self

A display of your system hardware appears.
- 5** Press the <Enter> key to continue.
- 6** Enable the MOUSE test module.
- 7** Change to the OPTIONS...RUN ALL TESTS menu.
- 8** Change the LOOP COUNT parameter from Unlimited to 1 pass.
- 9** Press the <Enter> key to start the test.
- 10** Test the mouse as requested.

This test takes about 20 seconds per run assuming a reasonable response from the operator.

Keyboard and onboard keyboard controller

The following procedure tests these functions and components of the keyboard:

- Interrupt-handling mechanism
- Scroll/Caps/Num Lock indicators
- Work as Text model

Note: A keyboard must be attached to the Under Unit Test (UUT) for some tests to pass.

Procedure 3-7
Keyboard diagnostics

- 1** Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2** Change to the testview directory:

`c:
cd c:\testview`
- 3** Start testview using the following command:

`testview /self`

A display of your system hardware appears.
- 4** Press the <Enter> key to continue.
- 5** Enable the KB test module.
- 6** Go to the OPTIONS...RUN ALL TESTS menu.
- 7** Change the LOOP COUNT parameter from Unlimited to 1 pass.
- 8** Press the <Enter> key to start the test.
- 9** Test keyboard LEDs as directed.

This test module takes approximately 20 seconds to run.

Monitor and video adapter card

This procedure tests the following functions of the monitor and its adapter:

- Video RAM
- VGA modes
- Pixel (picture element)
- Video oscillator
- Video controller
- Digital-to-analog converter (DAC)

The test group tests all video adapters recognized on the system. Each type of adapter has a set of modes that it supports, and each test in the group has a set of supported modes.

Procedure 3-8
Monitor and adapter diagnostic

- 1** Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2** Change to the testview directory:

c:
cd c:\testview
- 3** Start testview using the following command:

testview /self

A display of your system hardware appears.
- 4** Press the <Enter> key to continue.
- 5** Enable the VID_CL test module and its submenu tests.

Note: 512 Kbyte RAM, 2 Mbyte RAM, 1280 x 1024 x 25655, 1024 x 768 x 64 Kbyte, 800 x 600 x 16 Mbyte are not applicable. You can omit unnecessary tests by pressing the spacebar on selected tests.
- 6** Go to the OPTIONS...RUN ALL TESTS menu.
- 7** Change the LOOP COUNT parameter from Unlimited to 1 pass.
- 8** Press the <Enter> key to start the test.
- 9** Test the monitor as requested.

This test takes approximately three minutes with all applicable interactive tests enabled.

SCSI hard disk and controller

This procedure tests the following functions of the hard disk and its controller:

- SCSI hard disk controller
- Diagnostic track write/read
- All sectors/heads/cylinders access test



CAUTION! **Risk of data loss**

This module contains destructive tests.

Procedure 3-9

Running SCSI hard disk and controller diagnostics

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2 Change to the testview directory:

`c:
cd c:\testview`
- 3 Start testview using the following command:

`testview /self`

A display of your system hardware appears.
- 4 Press the <Enter> key to continue.
- 5 Enable the IDE_OR_SCI_DRIVE_0 module and its submenu tests.
- 6 Go to the OPTIONS...RUN ALL TESTS menu.
- 7 Change the LOOP COUNT parameter from Unlimited to 1 pass.
- 8 Press the <Enter> key to start the test.
- 9 Test the SCSI hard disk and its controller as requested.

This module takes approximately 10 minutes per run.

SCSI tape drive

This procedure tests the following functions of the tape drive and its controller:

- SCSI controller capability of supporting a 2.5-Gbyte tape drive
- Write/read option

Procedure 3-10

Running SCSI tape drive diagnostics

- 1** Boot the Application Processor from the floppy drive using DOS 6.22 or higher.
- 2** Change to the SCSI directory:

`c:
cd c:\scsi`
- 3** Insert a bootable floppy diskette into the floppy drive.
- 4** Copy the config.sys file to the bootable floppy diskette:

`copy config.sys a:config.sys`
- 5** Reboot the Application Processor from the floppy drive.
- 6** Change to the testview directory:

`c:
cd c:\testview`
- 7** Start testview using the following command:

`testview /self`

A display of your system hardware appears.
- 8** Enable the SCSI_Tape test module and all of its submenu tests, with the exception of Write_Read and Write_Read_All.
- 9** Go to the OPTIONS...RUN ALL TESTS menu.
- 10** Change the LOOP COUNT parameter from Unlimited to 1 pass.
- 11** Press the <Enter> key to start testview.
- 12** Test the SCSI tape drive as requested.

This module takes about six minutes per run.

Floppy disk drive and floppy disk controller

This procedure tests the following functions of the floppy disk and its controller:

- On-board floppy disk IDE controller capable of supporting a 1.44-Mbyte floppy disk drive
- Modular test architecture
- Run-in system test



CAUTION! **Risk of data loss**

This module contains destructive tests.

Procedure 3-11 **Running floppy disk drive diagnostics**

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2 Change to the testview directory:

`c:
cd c:\testview`
- 3 Start testview using the following command:

`testview /self`

A display of your system hardware appears.
- 4 Press the <Enter> key to continue.
- 5 Enable the FLOPPY_A test module and its submenu tests.
- 6 Insert a formatted floppy disk into the floppy drive.
- 7 Go to the OPTIONS...RUN ALL TESTS menu.
- 8 Change the LOOP COUNT parameter from Unlimited to 1 pass.
- 9 Press the <Enter> key to start the test.

This module takes approximately six minutes per run.

Testing expansion cards

The following sections outline diagnostic procedures for expansion cards in the Application Processor. The diagnostic routines are stored in their respective directories in the DOS partition.

IBM 3270 SNA card (Arnet SYNC/570)

The Arnet SYNC/570 is an expansion board for ISA computers which adds two synchronous/asynchronous serial ports. This procedure tests the following functions of the Arnet SYNC/570:

- IRQ, the base memory address, and the base I/O address
- control line loopback testing of RTS to CTS, and DTR to DSR to DCD
- data line loopback testing of the default single channel chained-block DMA transfer mode
- the ability of the card to generate interrupts by way of internal data loopbacks

Table 3-4 lists the correct memory and I/O address for the Arnet SYNC/570.

Table 3-4
SYNC/570 Interrupt/Memory address and I/O port addresses

IRQ	15
Memory Address	DC000
I/O Port Address	340

Table 3-5 lists the correct dip switch settings found on the Arnet SYNC/570 card.

Table 3-5
SYNC/570 dip switch settings

Switch 1	On
Switch 2	On
Switch 3	Off
Switch 4	On
Switch 5	Off
Switch 6	Off

Procedure 3-12
Testing the Arnet SYNC/570 card

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2 Change to the sync570 directory:

```
c:  
cd c:\sync570
```
- 3 Run the diagnostic using the following command:

```
sync570
```
- 4 Follow the instructions on the screen.
- 5 Ensure that the address is set as outlined in Table 3-4.
- 6 Install the single-channel loopback connector onto line 1 (bottom connector) when prompted.
- 7 Repeat the procedure for line 2 (top connector).
This test takes approximately five minutes.

Test results

In the event of a failed test, make sure that the I/O port address is set correctly (see Table 3-4). If the settings are correct, the card may have to be replaced.

Ethernet card (ZNYX PCI)

The following procedures outline test routines for the ZNYX PCI Ethernet card.

ping

In UNIX, the ping utility determines if the Ethernet card is connected to the network. The ping utility sends an ICMP echo (ECHO_REQUEST) packet to the host once every second. Each packet that is echoed back (through an ECHO_RESPONSE packet) is reported on screen, including round-trip time.

Notes:

- 1** To use the ping utility, the card must be properly configured.
- 2** The jumper does not need to be set for cable selection. Cable type is automatically determined by the configuration software.

Procedure 3-13

Using the ping utility

- 1** Run the ping utility on the local host to verify that the local network interface is working correctly.

Ping sends one datagram per second, and prints one line of output for every ECHO_RESPONSE returned. If an optional count is given, only the specified number of requests is sent.
- 2** From the UNIX command line, enter the following command to run the diagnostic:

ping hostname <Enter>

If no output is produced, there is a problem with the card. Run the diag312 diagnostic utility, as outlined in Procedure 3-14, to check the card.
- 3** Press <Ctrl+C> to terminate the program after a sufficient number of datagrams are sent.
- 4** When all responses have been received or the program times out (with a specified count), or if the program is terminated with a SIGINT, a brief summary is displayed similar to:

```
-----hostname.xxx.yy.com PING Statistics-----
```

```
87 packets transmitted, 87 packets received, 0% packet  
loss
```

```
round-trip (ms) min/avg/max = 0/0/3
```

- 5 If the test passes, test ping against other machines on the network.
- 6 From the UNIX command line, enter the following command to run the diagnostic, where *hostnumber* is the ip address of a machine on the network:

```
ping hostnumber<Enter>
```

- 7 Press <CTRL>-D to stop the test after several lines are displayed.

Ping test result

When all responses have been received or the program times out, or if the program is terminated with a SIGINT, a summary is displayed. If no output appears after ping is entered, there is a network problem. Check the card, configuration, and network connection.

diag312

Procedure 3-14 outlines the use of the DIAG312.exe DOS-based diagnostic to test the ZYNX PCI Ethernet card.

Procedure 3-14

Running the diag312 diagnostic

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.

- 2 Change to the Ethernet directory:

```
c:  
cd c:\ethernet
```

- 3 Run the diagnostic with the following command:

```
diag312
```

This procedure takes about five seconds to run.

Diag312 test results

If this diagnostic does not complete successfully, error messages appear. Replace the card if any of these messages appear.

Table 3-6 lists diag312 error codes and explanations.

Table 3-6
Diag312 error messages

Code	Output	Explanation
3001	MAC initialization failure	The device driver cannot initialize the network controller chip.
3002	MAC shared memory test failure	The device driver has tested shared memory that failed.
3003	(Excessive) Loss of interrupts	An unexpected loss of interrupts from the host system was detected.
3004	Configuration registers are locked	Used by ZX300 only. The adapter cannot have its configuration changed until there is a power down/power up cycle with the configuration reset jumper installed.
3005	Node address PROM failure	The driver could not read the Ethernet MAC address from the adapter.
3006	Bus error	The system reported a bus error.
3007	DMA error	The system reported a DMA error.
3008	(Excessive) FIFO Underrun	The system bus cannot provide data fast enough for a complete LAN transmission. Another device on the bus is taking too much bus bandwidth.
3009	(Excessive) FIFO Overrun	The system bus cannot absorb data fast enough. Another device on the bus is taking too much bus bandwidth.

VT100 serial card (DigiBoard PC/Xe board)

The following procedures outline test routines for the DigiBoard PC/Xe serial card.

The **UD-CISC.exe** DOS-based diagnostic tests the following functions of the PC/Xe board:

- dual ported memory
- the base memory address, and the base I/O address
- port test of a single port or all ports
- system compatibility and board reliability

The MPI UNIX-based utility is used to run DigiBoard Port Authority (DPA), which allows you to monitor the status of the Front End Processor/Operating System (FEP/OS). The DPA software also tests:

- individual port status
- board functionality
- performance level
- loop back tests to confirm data transmission and reception

Table 3-7 lists the correct interrupt/memory and I/O port addresses for two VT100 boards.

Table 3-7
VT100 Interrupt/memory and I/O port addresses

Board	Memory address	I/O port address	Switch 1	Switch 2	Switch 3	Switch 4
1st board	D0000	300	On	On	Off	On
2nd board	D0000	320	On	On	On	On

Procedure 3-15

Running the UD-CISC diagnostic

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2 Change to the diags directory:

c:
cd c:\diags
- 3 Run the diagnostic with the following command:

ud-cisc
- 4 Enter <A> when prompted for a board family.
- 5 Ensure the proper I/O address and Host Base Mem address is set as shown in Table 3-7.
- 6 Disable the Continuous Testing parameter.
- 7 Press <E> to start the test.

This procedure takes under one minute to complete. Pass/fail status is indicated on the right side of your screen.

UD-CISC Test results

If a failure occurs, check the Host Base Address and execute the diagnostics again.

If you receive a Hardware Reset Error, try a different I/O address (reset DIP switches), and try the diagnostics again.

Procedure 3-16

Running the MPI diagnostic

- 1 Log in as root.
- 2 Type in the following:

mpi <Enter>

The MPI main menu appears.
- 3 Select the **Monitor** option.

The DPA main menu appears.
- 4 Select the PC/Xe board option.

The Channel Monitoring screen appears.

- 5 Select a channel. Press 1–9 for channels 1–9, and a–g for channels 10–16.
- 6 Run a loop back diagnostic test against the selected channel. A loop back plug must be installed in the channel to be tested.

See the procedure below for the loop back test instructions.

Procedure 3-17 **Running the loop back test**

- 1 Verify that the channel is not currently in use. If the port is busy, the following message appears:


```
**** Port is Busy :DTR:CD:DSR:RTS
```

This message indicates that the port is open by some process, or that an incorrect loop back connector or cable is attached to the port.
- 2 Press the T (or t) key from the channel monitoring screen.

128 bytes of test data (the letter A is used) are placed in the transmit buffer. If this write operation fails, a message similar to the following appears:


```
**** Loop Back Test Failure #1.
```
- 3 After the write operation completes, the FEP/OS is notified that data is available for transmission. At this time, the 128 bytes of data is transmitted. If the transmission fails, the following message appears:


```
**** Loop Back Failure Sending 128 Bytes from Buffer.
```

This message indicates hardware failure, FEP/OS failure, or driver failure.
- 4 At this point, the FEP/OS should have received 128 bytes of data. If not, the following message appears:


```
**** Loop Back Failure Receiving 128 Bytes.
```



```
**** Data Not Transferred to RX.
```

This message indicates

 - hardware failure
 - loop back connector not installed or incorrectly wired
 - FEP/OS or driver failure

- 5** The 128 bytes of data are read from the receive buffer.

If the read operation fails, the following message appears:

```
**** Loop Back Failure Reading 128 Bytes from Buffer.
```

This message indicates

 - hardware failure
 - FEP/OS or driver failure
- 6** The data that was transmitted is compared with the data that has been read from the receive buffer. If the comparison fails, the following message appears:

```
**** Loop Back Failure Verifying 128 Bytes.
```

```
Data Incorrectly Transferred
```

This message indicates

 - hardware failure
 - FEP/OS or driver failure
- 7** If all test phases pass, the following message appears:

```
Loop Back Test Passed.
```

After the test completes, the input and output data can be viewed.
- 8** Press the **I** key to see the last 128 bytes of data that were placed in the receive (input) buffer.
- 9** Press the **O** key to see the last 128 bytes of data that were put into the transmit (output) buffer. The display shows the hexadecimal value of each character above the character itself. If the character is a non-printing character, “|” is displayed in its place.

Note: For security reasons, the receive buffer contents are only displayed if the loop back test passes.

Token ring card (Madge Smart 16/4 AT Plus)

The Smart 16/4 AT Plus Ringnode provides a token ring network connection for the Meridian IVR 2.0/I.

Connectivity tests

To test the token ring card for LAN connectivity, use the UNIX ping command as outlined in Procedure 3-13 on 3-23.

To test the token ring card for host connectivity, use the `express_adm` command as outlined in the following procedure.

Procedure 3-18

Using the `express_adm` command

- 1 Log in as root and change directory to the `express/bin` directory:

```
cd /u/express/bin/
```

- 2 Enter the following:

```
./express_adm admin <Enter>
```

- 3 Press 1 to choose *Work with Communication Adapters*.

- 4 Press 4 to choose *Test Communication Adapters*.

The **Test Communication Adapter** menu is displayed. This menu includes a list of all adapters currently installed in your system for EXPRESS.

- 5 Enter the appropriate number for the Madge Adapter.

A message appears indicating that the test is in progress.

- 6 If an error occurs, a message is displayed that indicates the source of the error.

- 7 Press <Enter> to return to the Test Communication Adapter menu.

This test should take less than 2 minutes.

Test Result Expected

If no errors are reported the card is functioning properly.

Token ring card configuration

You must make sure that the card is properly configured before running this diagnostic procedure.

Table 3-8 outlines the proper configuration settings for the Madge Smart 16/6 AT Plus.

Table 3-8
Token ring interrupt/memory and I/O port addresses

Connectivity type	IRQ	Memory address	I/O port address	DMA channel	Switch 1	Switch 2
LAN connectivity	10	DC000	1a20	6	On	Off
Host connectivity	15	DE000	3a20	5	On	On

Procedure 3-19 outlines how to configure the Madge Smart 16/4 AT Plus.

Procedure 3-19
Configuring the Madge Smart 16/4 AT Plus Ringnode

- 1** Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2** Change to the token directory:

```
c:
cd c:\token
```
- 3** Run the configuration by entering the following command:

```
trcfg
```
- 4** Press <F4> to begin the process.
- 5** Select the adapter using the arrow keys.
- 6** Press <F4>.
- 7** Select the proper IRQ, I/O port address, and DMA channel.

Procedure 3-20 outlines how to run the Madge Smart token ring card diagnostics.

Procedure 3-20
Token ring card diagnostics

- 1** Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2** Change to the token directory:

c:
cd c:\token
- 3** Run the diagnostic using the following command:

diag
- 4** Press <F4> to start.

This test takes approximately five minutes.

Test Results

Table 3-9 outlines error messages generated by the diag command.

Table 3-9
Token ring diagnostic error messages

Code	Output	Explanation
1001	Failed to bring up adapter	Either the Ringnode is faulty, or a Ringnode is not present.
1002	Failed to discover interrupt number	The Ringnode's interrupt may conflict with that of another device installed in the computer. Check the interrupt and I/O location settings.
1003	No adapter at specified address	No adapter has been found at the expected I/O location. Either no Ringnode is present, or the Ringnode is failing to respond correctly.
1004	No network adapter is installed, or an adapter is missing	No adapter has been found at the expected I/O location. Either no Ringnode is present, or the ringnode is failing to respond correctly.

Table 3-9
Token ring diagnostic error messages

Code	Output	Explanation
1005	Invalid IRQ number	The Ringnode's interrupt setting may conflict with that of another device installed in the computer. Check the interrupt and I/O location settings.
1008	Failed to download code to the adapter	Software was not successfully downloaded to the Ringnode. The Ringnode has insufficient memory or is not a Madge Smart 16/4 Ringnode.

Fax Card (Dialogic VXF/40E)

The VXF/40E Dialogic Fax board offers four ports of enhanced call processing and 14 000 bps Fax services in a single slot. The board is an AT form factor board with an 8-bit XT or 16-bit AT expansion slot. This board comprises a 4-line facsimile daughterboard mounted directly onto a D/41E World card.

Each Fax port should be tested. To perform these tests an external fax machine is needed. Once the diagnostic tool is run a fax transmission must be sent to each port and it is sent back to the fax machine to confirm correct operation of the fax card. This test only accepts a one page fax transmission and sends the page back to the fax machine twice to test different modes.

Faxdiag utility

Procedure 3-21 outlines how to use the faxdiag UNIX-based utility.

Procedure 3-21 **Using the faxdiag utility**

1 Log in as root.

2 Enter the following:

```
faxdiag <Enter>
```

The program requests the Fax Board Number.

3 Enter the number of the card to be tested. If there is only one Fax card in the machine, the number will be 1. Press the <Enter> key.

- 4** Enter the port number to test. There are 4 ports on each fax card, and there must be a line going into each one for the test to work. Press <Enter>.
- 5** Enter the External Fax Phone Number. This is the phone number of the fax machine that is sending the test fax. Press the <Enter> key.

One test should be run for each port on each card.
- 6** When you are finished, press <q> as per the instructions on the screen.

Faxdiag test results

If the fax is sent back correctly from each port, then the ports are working properly. Each test will send back 2 copies of the fax that was sent to it.